Recovery of the St. Lawrence Beluga Whale

Overview of Recovery Plan

December, 1995

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The St. Lawrence beluga whale (*Delphinapterus leucas*) lives downstream of a densely inhabited and very industrialized area in central Canada and north-east central USA which has been, and still is subject to pollutants of all kinds.

Beluga whales also live in the midst of a heavily-used commercial shipping route. Consequently, the St. Lawrence beluga has emerged as a worldwide symbol of the threats to wildlife originating from industrialization and overexploitation of natural resources. Its presence so far south and within easy reach of whale watchers, conservationists, and scientists has made it the focus of considerable attention. It has become an indicator of environmental quality, and has helped raise people's awareness of the importance of restoring the St. Lawrence ecosystem.

The St. Lawrence beluga population is classified as endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and is being considered for designation under Quebec's Threatened or Vulnerable Species Act. Hunting is held responsible for the decline of a population estimated at several thousand at the end of last century. Hunting for commercial purposes died out in the 1950s, but continued for sport and local consumption throughout the 1970s. It was officially stopped in 1979. At that time, there were believed to be only a few hundred animals left.

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as it seems, a combination of factors are reducing the species' naturally low population growth rate, then the St. Lawrence beluga may not recover from events that would cause a further decline in its numbers. In view of these concerns, the Department of Fisheries and Oceans (DFO) and World Wildlife Fund Canada (WWF) commissioned a group of independent experts to develop the *St. Lawrence Beluga Recovery Plan*. These experts formed the St. Lawrence Beluga Recovery Team.

Following up on past governmental initiatives to help belugas, namely the Interdepartmental Plan for the Survival of the St. Lawrence Belugas initiated in 1988 under the five-year St. Lawrence Action Plan (SLAP), the *St. Lawrence Beluga Recovery Plan* identifies known and potential factors posing a threat to the St. Lawrence population and recommends actions to reduce them.

Examination of carcasses retrieved from the shores of the St. Lawrence since 1982 suggests that the major threat is contamination. High levels of PCBs, DDT, Mirex, mercury and lead, as well as DNA adducts indicating exposure to PAHs, have been detected in St. Lawrence belugas. These substances are well-known for their toxic effects on animal life and for interfering with reproduction and resistance to diseases. Being at the top of the food chain, the beluga acts as a sink for these persistent contaminants. Despite recent reductions in the discharge of these toxic compounds, contaminant levels in the tissues of belugas have responded slowly to changes in loading. Adults continue to be exposed through their diet, while calves are receiving extremely elevated doses during lactation. This transfer of contaminants from mother to calf hampers the decontamination process for the beluga and probably slows down recovery.

The lesions observed in dead belugas are compatible with the known effects of these substances. The high number of tumours and multisystemic lesions point to a possible effect on the immune system. None of these lesions were found in much less contaminated Arctic belugas. Since these pathologies take long periods to develop, concern about the fate of the population is justified.

Other threats have not been adequately investigated, but disturbance by recreational activities could emerge as a limiting factor. Tourism is increasing in the area inhabited by the beluga and the informal agreement to exclude belugas from whale watching excursions is eroding. An increasing stream of boats could interfere with the activities of belugas, such as feeding, navigating and communicating. Their presence also increases the risk of collision. Commercial traffic, dredging and some forms of coastal development could also pose a threat to belugas. Competition for food resources, incidental catch in fishing gear and reduced genetic diversity do not seem to be threatening the belugas but the risk of a catastrophic event, such as a disease outbreak, is a serious cause for concern.

Interactions between diseases, stress induced by disturbance, and chemical exposure might prove especially detrimental to the St. Lawrence population. Even if the respective impacts of contamination and disturbance have not been decisively established, the Recovery Team believes that the weight of evidence warrants taking action. Waiting for all the scientific evidence to be in before proceeding could hinder the recovery of beluga whales.

Recovery of the St. Lawrence belugas will be achieved when population numbers and conditions reach a state where natural events and human activities will not threaten the survival of the

population. This will in turn lead to modifying the status of the population from endangered to vulnerable, as defined by COSEWIC.

In the Recovery Plan, team members have recommended a series of activities to which they have assigned a priority order. They also have identified organizations most likely to participate in implementing the recommendations. The Recovery Team proposes the following strategies:

A. *Achieve, in the St. Lawrence ecosystem, an overall reduction in toxic contaminants believed to be having an impact on belugas;*

B. *Reduce disturbance caused by human activities in areas frequented by belugas;*

C. *Prevent ecological catastrophes and ensure emergency preparedness;*

D. *Monitor the state of the population;*

E. *Investigate other potential obstacles to beluga recovery.*

Given the high chemical burden measured in dead belugas, a number of actions are directed at supplementing the efforts already in place to reduce pollution and at preventing the introduction of potentially deleterious substances. More specifically, the Recovery Team recommends that the industries discharging PAHs, mercury and lead should develop pollution prevention plans in order to eliminate inefficiencies and adopt the best available non-polluting technologies. Non-point sources for these contaminants and banned substances (PCBs, DDT and Mirex), such as sewage treatment plants, leachate from dump sites, and long range atmospheric transport, should be identified and reduced. Contaminated sediment sites which pose a threat to belugas should be characterized and decontaminated.

The plan also presents activities for reducing disturbance and establishing viable cohabitation between humans and belugas. Awareness campaigns should emphasize the importance of not disturbing the belugas and steps should be taken to ensure that belugas do not become the target of whale watching excursions. Moreover, since belugas exhibit a high level of fidelity to a number of sites within their summer range, these areas should all be considered sensitive to boat traffic and to future coastal development projects. For example, measures to limit the speed of boats or the number of boats in a given area could be examined. Such measures are preferable to prohibiting access, although area closure remains an option for the future.

Preventing a catastrophe, such as an oil spill or a disease outbreak, is probably impossible, but measures should be taken to minimize the associated risks. For example, the release of marine mammals that were held captive, or the relocation of wild animals, could be restricted as these animals could be a source of pathogens. One of the Recovery Team's recommendations is to establish necessary emergency measures in the event of an epizootic (disease outbreak), or an oil spill.

A number of research activities have been integrated with the plan to help guide actions. Research projects are also directed at identifying other possible obstacles to recovery. Food and habitat requirements at different times of the year, genetic diversity, as well as competition with other species and fishing activities are among the aspects of beluga ecology that should be investigated.

Finally, monitoring activities are essential to document the effectiveness of the plan by signalling any improvement or deterioration of the situation. These activities include conducting population aerial surveys every three years and continuing the carcass retrieval program.

The various organizations involved in the implementation of the Recovery Plan are identified in an implementation schedule within the Plan. Each activity in this schedule is assigned a priority order, and cost estimates, as well as dates for completion of the recommendations, are suggested. A strategy for monitoring the Plan is also proposed.

It should be kept in mind, however, that recovery will not be quick. The Recovery Team estimates that the actions taken should result in a measurable increase in population size within the next 24 years, assuming an annual population growth of at least 1%. The success of the plan will depend on the will of governments, industries, environmental groups and the public to participate in protecting beluga whales and restoring the St. Lawrence. Indeed, not only will belugas benefit from these actions, but also the ecosystem as a whole, and human health in particular.

St. Lawrence Beluga Recovery Team

The St. Lawrence Beluga Recovery Team is co-chaired by Richard Bailey from the Department of Fisheries and Oceans (DFO) and Nathalie Zinger of World Wildlife Fund Canada (WWF), and is composed of independent experts. The two co-chairs and the members of the team have been selected on the basis of their expertise and competence in a variety of complementary fields. In June 1994, the multidisciplinary team was charged with the responsibility of developing a recovery plan for the endangered St. Lawrence beluga whale.

Richard Bailey Co-chair of the St. Lawrence Beluga Recovery Team. Richard Bailey is in charge of the marine mammal section at the Maurice Lamontagne Institute, a DFO research facility.

Nathalie Zinger Co-chair of the St. Lawrence Beluga Recovery Team. Nathalie Zinger is WWF's Director for the Quebec region.

Pierre Béland, Ph.D., is a scientific researcher and director of the St. Lawrence National Institute of Ecotoxicology (SLNIE).

Gary Blundell participated in the 1994 meetings. At the time, he was Manager of Species Recovery at World Wildlife Fund Canada and Chairman of RENEW's Priorities and Recovery Teams Subcommittee.

Michel Boivin is Chief Park Warden at the Saguenay / St. Lawrence Marine Park.

David Gaskin, Ph.D., is a professor at Guelph University with extensive experience in whale research in various parts of the globe.

Michael Kingsley, Ph.D., is a researcher at the Maurice Lamontagne Institute whose training is in applied mathematics, including statistics and operational research.

Ken Lum is Programme Coordinator at the World Conservation Union – Canada (IUCN).

Robert Michaud is co-founder of a research and education group on marine mammals (GREMM).

Pierre Terrault is a chemical engineer at the ministère de l'Environnement et de la Faune du Québec.

Anne Vézina, a biologist and scientific writer, put together the Recovery Plan.

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